

Monitoring Protocol for GWSS Egg Density and Parasitism

On first Visit Record:

1. Address
 - County
 - Nearest cross street
 - Exact street address if possible
2. GPS location
 - N and W coordinates
 - Altitude in meters
3. Site Details
 - Approximate size of orchard (# of trees)
 - Neighboring vegetation (Urban, riparian, agricultural)
 - Irrigation method (Surface, drip, sprinklers)
 - Maintenance level (high, medium, low)
4. Plant details
 - Species (orange, lemon, toyon)
 - Variety (if known, navel, valencia)
 - Size (in feet)
 - Condition (poor, moderate, good)
5. Give site identifying code
 - First letter for county
 - Next three letters for place (Van Buren, Temecula, UCR)
 - Last number for site (E.g. RVAN1 and RVAN2)

On every visit:

1. Record date, time, site and county on the top of the data sheet.
2. Record condition of plants (healthy or unhealthy), plant stage (flowering, ripe fruit, etc.), presence of GWSS (adults or nymphs) or presence of wasps.
3. Prepare the ziplock baggies with site code, D1-D10 or P1-P5.
4. Record on baggies the types of trees monitored and total time of D search.

EGG DENSITY MONITORING (D-trees)

1. Start timer.
2. Randomly select a tree that is at least 2 rows into the grove.
3. Turn over one fully expanded leaf and inspect for egg masses.
 - Leaves should be checked at a height of about 1 meter.

4. If a fresh egg mass is present pluck the leaf and label which tree it was collected from. Put the leaf in the ziplock baggie.
5. If you are unsure if the egg mass is fresh or old, treat it as if the egg mass is fresh. Someone back at the lab will determine the validity of each egg mass.
6. Thirty leaves must be checked on each tree. As you check leaves progress around the tree so that the thirtieth leaf is close to the first leaf checked.
7. Repeat for all the Density (D) trees.
8. After the last leaf is checked stop the timer. If at any point during the monitoring you are distracted stop the timer until you begin monitoring again. Pause the timer when you are not actively monitoring (walking from tree to tree, writing data on baggie, etc).

PARASITISM RATE MONITORING (P-trees)

1. Start timer.
2. Go to a randomly selected tree that has not been checked earlier.
3. Lift branches and scan for egg masses
4. Pluck any fresh egg masses and label which tree they were collected from. Place in the baggie.
5. Sample around the tree randomly
6. After two minutes stop monitoring and move on to the next randomly selected tree.
7. Repeat for all the Parasitism rate (P) trees.
8. If no fresh egg masses were found during either monitoring, all collectors are to continue searching until 1 egg mass has been found or one total hour has elapsed (this will be ½ hour if 2 people are monitoring).
9. We are no longer stopping at a total of 10 collected egg masses, please continue collecting all fresh egg masses found.